SPATIO-TEMPORAL ANALYSIS OF CRIME AGAINST WOMEN IN NASHIK CITY: A GEOGRAPHICAL STUDY

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1.1 INTRODUCTION:

Crime is a social occurrence, which distresses the well fare of the society, its association and development. That is why crime is seen seriously by society. A typical behavior pattern has been created for each community to have a strong foundation and management. Crime and the fear of crime are important aspects of everyday life and the same way human geographers who have inspected the connections among crime, space and society, crime is at the local , nationally and international level. It is important to know the effects of crimes and to classify how geographic and social forms can help police to stop crime. As well as geography is important to understand where crimes are most likely to be committed, to dispel crime and to design areas to be more crime showing. In the Geography, Crime location is very important, because there are many reasons that can upsurge the amount of crime in an area. There are large midpoints of population close by where there is greater chance to commit a crime. Good roads and transportation links permit criminals to move around more simply. On public space, also criminals have more opportunity to commit crimes because there they can hide without difficulty and get away swiftly.

In the 21st century in India, both technological development and crime against women are going on together. There are different kinds of crime against women and women can be victims of such crimes at any place like at home, public places or workplace etc. Increase in crime against women has also adversely affected social, economic, political and cultural development. The crime against women has nowadays become a big issue and it cannot ignored anymore because women are part of our country and they represent half the population of our country. In the country the crime against women and other crimes are increasing more and more. On 15th August 1947, after the independence of India, many laws were executed for the protection of women rights, to reduce the injustice with women. Still we are unsuccessful to stop the increase in oppression against the women. In the last several years, the number of physical and mental abuse of women is increasing. Actually, the government and social institutions have provided the statistics of women atrocities, which has registered crime reports collect from police station, but the number of incidents in the dark is much higher than the recorded cases due to

many reasons. Effective laws and strict enforcement is necessary to eradicate the rate of injustice and cruelty against women the public awareness is necessary. Hundreds of women before and after independence have been facing various kinds of crime. Although there is an increase in the education and financial independence of women, also, they are playing a respectable role in the society, yet in reality, they are the victims of human exploitation in some way or the other. Often awkward advances by men are ignored and go unreported, as the women fear that the police may further victimize them. However, it must also be recognized that crime against women has existed over the ages both in the form of criminal violence, domestic violence and social violence. Crime against women is neither culture-specific nor region specific. It is uniformly distributed in every society. The difference in statistical figures on crime against women in every country is in degree and scale. Crimes such as wife beating, harassment, dowry death etc. also depends on the culture and status of women in different societies. While in India, reporting is low, as it is a social stigma to report incidences of sexual assault and harassment. In India, the statistics of rape complaints were first reported in India in 1973. In that year, 2919 cases of rape were registered in various police stations across India. In 2010, the number of such prosecution reached 20 thousand 262. According to a report submitted by the Central Government on January 27, 1993 against crime against women, every 54 minutes a woman is raped in India. This means that there are 800 rapes in a month and 9,600 in one year; all these numbers in this regard are disturbing.

Criminal mapping is important, especially when geographical information System (GIS) is increasing rapidly. Geographic Information System (GIS) uses to collect all kinds of crime data on a platform. In criminal mapping and analysis, GIS is playing an imperative role. The use of Geographic Information System (GIS) for crime mapping facilitates to map, visualize and analyze crime hot spots, along with other trends and patterns. It is a key component of crime analysis and the policing strategy. Crime mapping is very important to know exactly how crime affects services in the region and communities. The GIS allows police personnel to plan effectively for emergency responses, determine mitigation priorities, analyses historical events and predict future events. It can also be used to get critical information to emergency responders upon dispatch or incident to assist in tactical planning and response. The cartographic representation has some advantages such as visual analysis and statistics of crime, aggregate information in the spatial matrix, produce thematic maps all of which help to communicate the

results of the analysis. Spatial incidents and hot spot analysis of Crime data visualized in three-dimensional environments. GIS helps crime analysis in many methods. The primary use is to imagine crime rates. This allows law enforcement agencies to understand where crime is occurring as well as determine if there are any patterns. Areas of high crime density as hot spots. Hot spot analysis is a valuable tool as it allows police to not only identify areas of high crime but also explore variables that are affecting crime patterns. For example, mapping drug arrests may show an increased density around locations that have public telephones. A decision support system generated using GIS for crime reduction and mapping. It also focuses on providing real-time information, resulting in efficient and effective decision support system to help multiple areas like Health, Defense and Disaster and so on.

1.2 REVIEW OF LITERTURE:

There are publications on the varied natures of crime, such as in the form of articles, essays, research papers and dissertations. The publications are dealing with the distribution of crime, its effects on society, its trends and its types. Even pathology of crime and delinquency, society and crime are the topics treated. "Every society has to face many problems and crime is one of the dynamic problems. Social problems are regarded to have side effects" is the opinion of Burgess and Borgue (1964). Mr. Krishna Swami (1978) has written about urban crime, that the crime is linked with social norms and it is not a fixed quantity.

The Geography of crime, which studies the criminal offenders, the incidence of crime and the characteristics of the victims in a spatial perspective, appeared in its modern approach in early 1970. Howard Jones in his paper "Crime and Penal Systems" (1956) stated that crime is costly and has reached such dimensions as to constitute a real threat to our way of life.

Seema (2013), A Geographical Study of "Crimes against Women in Haryana- A Case Study of Bahadurgarh District". In this context, the crime against women and the status of women is always disclosed in relation to the people of India's society. This inspection has resulted in various customs and violence against women inside and outside their home, which is a major problem. In this case, they have studied the development and crime records against women.

"Crime against Women in Chandigarh: A GIS Analysis" is the opinion of Simrit Kahlon (September 2014). The present study seeks to identify the spaces that are more prone to crime and the reasons thereof. The study was carried out in the GIS environment. It emerges that the

occurrence of the crime is linked to the socio-economic profile of the population of an area. Police visibility is a deterrent to the occurrence of crime.

"Predictive Analysis of Cyber Crime against Women in India and Laws Prohibiting Them" is the opinion of Anjana Kumari, Dr. Kapil Sharma and Dr.Manju Sharma (Delhi, March 2015). This paper presents a prophetic analysis of cybercrimes against women in India and laws that stop cyber abuse in general and women in specially. Cybercrime is mostly used to define the actions in which computers or networks are a device, a target, or a place for criminal activity. Development in technology has led to a sudden growth in cybercrimes and discrimination of women in the cyber world.

Manish Kumar (April 2015) in his paper "Crime Against Women in India: A Geographical Analysis", Present study deals with the subject of crime against women in Indian society. In this paper is an overview of crime against women as well as here they have made an exertion to analyze the statistical data on crime against women in India.

"GIS-Based Spatial and Temporal Analysis of Crimes, a Case Study of Mardan City, Pakistan" is the opinion of Pukhtoonyar, Jamal Nasir (March 2016). This paper pointed to the crime with special reference to its spatial and temporal distribution. They try to analyze and guesses the effect of weather on the prevalence of criminal activity in Mardan City. In this study, the data was collected about murder and violent attacks from all the three police stations covering Mardan City as well as the collected data were analyzed under different situations.

"Geography of Rape Crime in India: A Spatial Analysis of Official Data" is the opinion of Darshan Kumar Jha (December 2015). In this paper, he has studied about the status of women in Indian society as well as rape and related issues. In this paper, an objective is to study the spatial pattern of Rape crime and data analyses. For defining the spatial pattern and vulnerability, Standard Deviation (SD) technique was used. In this study, he has used the formula for calculating the Average Rate of rape crime is measured as Standard Variable and SD. Along with it, he analyzed the relation between the rate of rape and socio-economic displays of society.

(February, 2013) Smriti Sharma's research topic was "Hate Crime in India: An Economic of Violence and Atrocities against Scheduled Castes and Scheduled Tribes" In this study, she studied the effect of deviations in relative material standards of living amid the SC/ST and upper castes. It also studied the changes in the incidence of crimes against SC and ST.

“Pranav Kedia (July, 2016) the research on “Crime Mapping and Analysis Using GIS” in this paper he used GIS for crime mapping and its analysis for law implementation and crime management. This study proves that GIS gives us a better succinct viewpoint to crime mapping, analysis, decision making and better to present a layman and hence prevents crime.

Virender Chhachhiya (July 2017) his research was on “Spatio-Temporal Analysis of Kidnapping and Abduction of Women in Chandigarh”. This study provides a geographical base, the spatial pattern of crime against women. In this paper, he studied about the temporal trends of kidnapping and abduction of women. In addition, these difference hinge on upon many factors like socio-culture, economic development, population growth by natural as well as through migration and female literacy. In this study, he also used hot spot. Hotspots also help police for prone areas.

Rajeshwari Dr and Preeti Jangra (2017) “Spatio-Temporal Pattern of Crime Against Women in Haryana: 1991 to 2014” In this study, the present paper attempts to the study the spatial pattern and variation and crime against women by selecting Haryana as study area. The analysis is based on secondary data obtained from NCRB. Since the nature of crime is closely related with social, economic, legal and political structure of society, hence this paper also attempts to study the types of crime against women in the state over a period of 24 years that is from 1991 to 2014.

“Crime Mapping in Nigeria Using GIS” is the opinion of Toju Francis Balogun, Henry Okeke, Christain If any in Chukwukere (October, 2014). In this paper, they surveyed a crime situation in Benin metropolis using a questionnaire to collect to generate information from the public and the police. This study shows that GIS can give a better concise perspective to crime study, analysis, mapping, proactive decision-making and ban on crime. It however, suggests that migrating from traditional method of crime management to GIS demands capacity building in the area of personnel, laboratory and facilities backed up with the policy statement.

R.N.Mangoli, Ganapati M.Tarase (2 December 2009) they researched on “Crime Against Women in India: A Statistical Review” In this paper, they studied to discover the main reasons in increase in the trend of crime against women.

“GIS-Based Serial Crime Analysis Using Data Mining Techniques” is the opinion of S.Sivaranjani, S.Sivakumari, S.Maragatham (November 2016). In this study, they found out the serial crimes and they investigated the large number of crimes. They used Quantum Geographic

Information System (QGIS) tool for visualizing, navigating, manipulating and analyzing geographic crime datasets.

M.Vijaykumar, P.Balamurugan, Basim Alhadidi, Hanumanthappa (April 2014) they researched on "Crime Classification Algorithm for Mining Crime Hot Spot and Cold Spot" in this paper they worked on the basic results of a crime forecasting model developed in association with the Tamil Nadu Police Department and they collected the crime records from various Police Departments and reorganize the crime database. In this research work they analyzed several classification methods which predict crime hotspots correctly.

L.BalajiSaravanam, S.R.Nagarathinam, Vinothkanna.S, H.Soundarraj (12 December 2016). "A Study on Spatial Distribution of Criminals Residence and Their Behavioral Aspects InCoimbatore City". In this research, they worked on future planning and prevention of crime, studied about the criminals residential locations as well as criminal's behavioral aspects and there are socio-economic featured. Hence, they studied the spatial distribution of criminal's residences and their behavioral aspects in Coimbatore city.

Crime mapping and Hot Spot Analysis using Geospatial Techniques: A Case of Ajmer City" is the opinion of Dr. Monika Kannan, Dr. KasinaV.Rao, Mr. Mayur Raj, Mr. P.Alok Verma. In this research work, they studied on the spatial crime mapping and demarcation of hot spot zones to control crime and in this study, they recognize crime-prone zones through crime mapping.

1.3 STUDY AREA:

Nashik city is the capital of Khandesh and also has a head quarter of Nashik revenue division and so also Regional office of Maharashtra Pollution Control Board. Nashik city is an important and one of the famous ancient cities of Maharashtra. It is a district head quarter located on the banks of Godavari River and is at 565 meters above mean sea level (MSL). Two interpretation are available on origin of the name 'Nashik', the first relates with the town situated on nine peaks (Navshikhar) and second relates to the incidence in Ramayana where at this place Lakshmana is said to have cut off the nose (nasika) of Shurpanakha, a sister of Lankadhipati Ravan. It is aplace of rich heritage and culture and now developed into a metropolis with a population of approximately 15 Lakhs. The banks or the Ghats of the river Godavari are considered to be sacred people take holy

dip in the"Kundas" (Ponds) constructed on the river banks. Godavari river is "Dakshin Vahini", Ramkund is a unique place of religious importance at all the times, especially in the "Kumbhamela". Nashik, a major industrial town situated at Latitude 19^0 33' and 20^0 53' North Latitude and between 73^0 16' and 75^0 6' East longitude in Northern Maharashtra, is located at a height of 565 meters above mean sea level at a distance of 185 Km from Mumbai (Bombay), 220 Kms from Pune, 165 Kms. from Ahmednagar and 180 Kms from Aurangabad. The total area is 259.13 Sq.Km. which is 2nd largest in Maharashtra after Mumbai. It has a population of 15,00,000 and road length of 850 Kms. Similarly Mumbai Agra National Highway No. 03 and Nashik-Pune National Highway No.50. The main rivers flowing in the district are Godavari, Kashyapi, Darna, Girna, Kadwa and Nasardi (Nandini). There are two industrial estates namely Satpur having 1600 Acres and 750 numbers of units and Ambad having 1400 Acres area with 850 numbers of units. The city has become the center of attraction because of its beautiful surroundings and cool and pleasant climate. Nashik has a peculiarity of its own due to its mythological, historical, social and cultural importance. The city, vibrant and active on the industrial, political, social and cultural fronts, has influenced the lives of many great personalities. The river Godavari flows through the city. Temples and Ghats on the banks of Godavari have made Nashik one of the holiest places for Hindus all over the World. Religious spots such as Trimbakeshwar, Panchavati and Tapovan are known all over India. Nashik Municipality was formed in the year 1864 and in the same year, Nashik was made a fully-fledged district with 13 Talukas. Presently there are 15 Talukas namely Nashik, Peth, Dindori, Surgana, Kalvan, Baglan (Satana), Devla, Trimbakeshwar, Malegaon, Chandwad, Nandgaon, Yeola, Niphad, Sinnar and Igatpuri. Nashik District is a major agricultural center known for grapes, onion, flowers, sugar cane, rice and popular vegetables. Grapes, onions and flowers are exported all over the World. Cultivated area is around 56 per cent of the total land area. Nashik abounds in forest wealth. The forest lies in the western part of the District. Surgana, Kalwan, Peth, Dindori, Nashik and Igatpuri Talukas have a number of forests. Teak and sissoo trees are found in large number in these forests. Besides these trees and shrubs like anjan, agave and bamboo are also found here. The jungles are in habitat by animal such as wolves, hyenas, sambars, foxes and birds like koels, kingfishers and peacocks.

According to 2001 census, the population of Nashik city was 10,77,236 persons. Out of which 53.44 percentage is male and 46.56 percentage is females.

The study has 65 words in 1991 but it increased in 2001 up to 87 words. The city since old days basically the design of a religious place. However to it has been a flourishing industrial center as well as educational centers. Therefore, I decided to study the Nashik city a study of urban geography.

1.4 AIM AND OBJECTIVE:

The aim of research is "Spatial-Temporal Analysis of Crime against Women in Nashik City Based on Geographical Information System". Following are some objectives have been used during the research.

1. To Analysis how status of women is related to 'crimes against women'
2. To identify the deferent forms of crime against women according to time and space.
3. To identify the spatial and temporal trends in crime against women for Nashik City.
4. Application of Geospatial technology of analysis of crime against of women's.
5. To identify the crime prone area of the Nashik City and give some mitigate majors to create proper environments for more safe and harmonious situation.

1.5 DATA COLLECTION:

The present study is carried out with the help of secondary data. It is collect from various Police stations in Nashik city.

SECONDARY DATA:

The secondary data for the present study has been collected from the following source.

- District census handbook 1991, 2001 and 2011.
- Police Station in Nashik City.
- Various reports of Nashik City.
- USGS Earth Explorer.
- Google Earth
- GLCF Website and Various newspaper and journals, Publish and unpublished thesis.

1.6 METHODOLOGY:

Present study will carry out with the help of primary data and secondary data. The data will collect through field surveys of various Police Stations in Nashik City. The study has primarily based on secondary data, which will take from Index Registers of all urban police stations. The analysis will includes the number of registered cases at each Police Station from 2010 to 2020. The analysis will includes crime location on that area each crime of police station

in Nashik City. The collected data has been processed and analyzed by using different quantitative, statistical technique and computer based software's. The analyze basic on the tables has been done as well as represent of graph, diagrams and maps. Google Earth also used for identifies the crime hotspot in the Nashik City.

1.7 IMPORTANCE OF THE STUDY:

The occurrence of crime against women is strong related to spatial element. Not all spaces, neither all time are equally vulnerable to crime. The present study seeks to identify the spaces that are more prone to crime and the reasons there of. The use of Geographic Information System (GIS) for crime mapping facilitates to map, visualize, and analyze crime hot spots, along with other trends and patterns. It is a key component of crime analysis and the policing strategy. GIS allows police personnel to plan effectively for emergency responses, determine mitigation priorities, analyses historical events, and predict future events. It can also be used to get critical information to emergency responders upon dispatch or incident to assist in tactical planning and response.

1.8 PROPOSED WORK PLAN:

First year plan

1) Review of Literature:

   To approach this study, a review of published literature on relevant subject as well as unpublished material from different researchers and institutions specific to study area will be carried out.

2) Data collection:

   Data will be collected from various secondary sources will be collected with help of fieldwork and other methods.

Second year plan:

Collected data related to our research will be analyzed and tabulated with the help of various statistical methods, and later on it will be presented with the help of cartographic and GIS techniques with help of software's.

Third year plan:

1) Interpretation of data:

Data will be interpret in this year.

2) Writing and submission of thesis:

The thesis will be written after the interpretation of data and achievement of objectives and will be submitted at the end of third year.

1.9 CHAPTER OUTLINE:

The present study titled of "Spatio-Temporal Analysis of Crime against Women in Nashik City Based on Geographical Information System". The fifth chapters have divided the present research work.

Chapter I deal with the appraisal of problems. This chapter given the detailed information about urban growth, introduction of urban, review of literature, study area, objectives, data collection, importance of the study, proposed work plan and methodology is present research work.

Chapter II is geographical setting of study area deal with the physical position of study area including the physiography, drainage system, and annual rainfall, and temperature, economic status of study area, transportation network and tourism of the study area.

C**hapter III** is deal with the Status of the women's and deferent forms of the crime is time and space in Nasik city.

Chapter IV deals with Spatial and temporal trends and used geospatial techniques.

Chapter V deals with identify the crime prone area of the Nashik city and give some mitigate majors to create proper environments for more safe and harmonious situation.

Chapter VI which will the concluding chapter contains the summary and conclusions, which includes findings, suggestion

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